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WEST INDIAN SPECIES OF
SELAGINELLA

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CHEILANTHES FROM AFRICA
AND SOME ADDITIONS TO THE
FERN FLORA OF NORTHERN RHODESIA

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Pp. 25-50; *Pl.* 2

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THE BULLETIN OF THE BRITISH MUSEUM
(NATURAL HISTORY), instituted in 1949, is issued
in five series, corresponding to the Departments of the
Museum.

*Parts appear at irregular intervals as they become ready.
Volumes will contain about three or four hundred pages,
and will not necessarily be completed within one calendar
year.*

This paper is Vol. 1, No. 2 of the Botany series.

PRINTED BY ORDER OF THE TRUSTEES OF
THE BRITISH MUSEUM

Issued September 1952

Price Eight shillings

A REVISION OF THE WEST INDIAN SPECIES OF SELAGINELLA

By A. H. G. ALSTON

No revision of the West Indian species of *Selaginella* with a key has ever been published, and this work has, as might be expected, involved a great reduction in the number of species recognized. Twenty-seven species are now recognized as native to the islands, though one (*S. umbrosa*) is possibly an introduction. Trinidad and Tobago are excluded from this account as the species found there have already been dealt with in a separate paper (*Journ. of Bot.* lxxii: 33-40 (1934)). Barbados is, like Trinidad and Tobago, part of the South American continental shelf and is not genetically connected with the Lesser Antilles. It became elevated above sea-level in the Pliocene or early Pleistocene. Trinidad was then connected with northern Venezuela but probably not with Barbados. Barbados has only one *Selaginella*, which is a species also found in Tobago but not in Trinidad or Venezuela.

The Lesser Antilles fall into two groups geologically. Firstly there is an older, north-eastern series of volcanic islands with limestone tops. These are mostly comparatively small, dry islands from which no species of *Selaginella* has been reported. The low flat eastern half of Guadeloupe, known as Grande Terre, also belongs to this series. Secondly there is a younger series of islands (Saba to Grenada) consisting of volcanoes, separated from the Antillean geanticline, on which the Virgin Islands are situated, by the deep Anegada passage. The Virgin Islands are thought to have been united with Puerto Rico as recently as the Pleistocene. Two species of *Selaginella*, *S. flabellata* (L.) Spring and *S. rotundifolia* Spring, are confined to the Lesser Antilles and both have been collected from most of them. Both these species are found in Grenada, but the Tobago species *S. umbrosa* Lemaire ex Hieron., *S. flagellata* Spring, *S. trifurcata* Bak. and *S. producta* Bak. are none of them found in Grenada. *S. flabellata* closely resembles a widespread Andean and Central American species—*S. anceps* C. Presl. The affinity of *S. rotundifolia* is less obvious, but it resembles both *S. ovifolia* Bak. from the Greater Antilles and *S. microdonta* A. C. Sm. from Mt. Duida, Venezuela.

The islands of Puerto Rico, Hispaniola and Jamaica are thought to have formed a single land-mass connected with Honduras in the early Pliocene (Schuchert:¹ 437) and have subsequently been variously united and fragmented, but never completely submerged (*op. cit.*: 709). Cuba seems not to have been directly united with these islands since the Lower Oligocene (*op. cit.*: t. 11), and has remained completely severed from the mainland since the Middle Oligocene (*op. cit.*: t. 12). There is one species confined to British Honduras and these three islands which is not also found in Cuba—*S. ovifolia*. *S. plumosa* (L.) C. Presl extends from Cuba through the Greater Antilles to St. Thomas in the Virgin Islands, and *S. substipitata* Spring, which is found in the

¹ C. Schuchert. *Historical Geology of the Antillean-Caribbean Region*. New York, 1935.

Lesser Antilles and Trinidad, extends to Puerto Rico and Hispaniola but has not been found in Jamaica or Cuba. *S. krugii* Hieron. is endemic in Puerto Rico and *S. laxifolia* Bak. ex Krug represents *S. confusa* Spring there. Hispaniola has one endemic which is very distinct among the West Indian species—*S. fuertesii* Hieron.—and *S. flabellum* (Desv.) Spring, apparently representing *S. subcaulescens* Bak. *S. denudata* (Willd.) Spring is endemic in Jamaica and *S. hispida* (Willd.) A. Braun ex Urb. represents *S. plagiochila* Bak. Hispaniola and Jamaica perhaps share *S. leonardi* O. C. Schmidt.

The more isolated geological history of Cuba is not strongly reflected in the *Selaginella* flora. There are two endemics, *S. pauciciliata* Hieron. and *S. prasina* Bak., while *S. bracei* Hieron. ex O. C. Schmidt is found in Cuba and the Bahamas. Two mainland species, *S. convoluta* (Arn.) Spring and *S. microdendron* Bak., reach Cuba, but the former is also found in Hispaniola and the latter in Jamaica. Cuba and Hispaniola also share *S. plumieri* Hieron. and *S. plagiochila*, while Cuba, Jamaica and Hispaniola have *S. heterodonta* (Desv.) Hieron. in common. *S. subcaulescens* is found in Cuba, Jamaica and Puerto Rico, but is represented by *S. flabellum* in Hispaniola. Cuba and Jamaica have *S. confusa*. Puerto Rico, which is 450 miles from Cuba, has five species common to Cuba, though the two islands do not appear to have been united since the Lower Oligocene (*op. cit.*: t. 11); it has a distinctly poorer *Selaginella* flora than the other large islands. The only generally distributed species is *S. tenella* (Beauv.) Spring. *S. serpens* (Desv.) Spring is also found in both Greater and Lesser Antilles. The Bermudas, which probably originated in the late Cretaceous (*op. cit.*: 738) and covered about 230 square miles in the Pleistocene, have no native species of *Selaginella*.

It is evident that the 80 miles of sea separating Tobago from Grenada, and the 120 miles which separate St. Thomas from Saba, are much more formidable barriers to *Selaginella* than the 90 miles between Cuba and Jamaica, and there seems to be no reason for this but the geological history of the various islands.

This account has been based on the Museum collection (BM), a loan of the fine collection of the New York Botanical Garden (NY), supplemented by additional records from Kew (K), Gray Herbarium, Harvard (Gray), Leyden (Ley), Washington (US), Oxford (Ox), Paris (P) and Geneva (G). The author wishes to express his indebtedness for the loan of this valuable material.

KEY TO THE SPECIES

- Leaves uniform, spirally arranged (group of *S. rupestris*) 1. *pauciciliata*
- Leaves dimorphous:
 - Main stems usually with flagelliform apices:
 - Median leaves oblong-ovate, acuminate; lateral leaves rounded at base 20. *heterodonta*
 - Median leaves ovate, aristate; lateral leaves cordate at base 19. *cordifolia*
 - Main stems without flagelliform apices:
 - Main stems erect or suberect, rooting at base only:
 - Erect stems red (Barbados) 2. *umbrosa*
 - Erect stems not red:

- Stems blackish; leaves subcoriaceous . . . 3. *convoluta*
- Stems straw-coloured, buff or greenish; leaves membranaceous:
- Leaves of erect stems uniform, adpressed, directed upwards:
- Axillary leaves ovate; light green; stems (+leaves) up to 2 mm. across (Cuba and Jamaica) . . . 4. *microdendron*
- Axillary leaves oblong-lanceolate; dark green; stems (+leaves) up to 4 mm. across (Lesser Antilles) . . . 5. *flabellata*
- Leaves of erect stems spreading and dimorphous, at least in the upper part:
- Lateral leaves ovate:
- Plants 3-15 cm. high; microspores with sessile papillae on the distal surface (Cuba and Jamaica) . . . 6. *confusa*
- Plants 7-30 cm. high; microspores with stalked papillae on the distal surface (Puerto Rico) . . . 7. *laxifolia*
- Lateral leaves oblong:
- Lateral leaves usually ciliate, somewhat decrescent at unbranched base of stem; rhizophores filiform:
- Median leaves auriculate . . . 8. *flabellum*
- Median leaves exauriculate . . . 9. *subcaulescens*
- Lateral leaves denticulate; leaves dimorphous; stem branched to base; rhizophores straight and stout . 10. *substipitata*
- Stems prostrate and rooting throughout:
- Rhizophores dorsal, extra-axillary; stems articulate:
- Axillary leaves auriculate . . . 11. *plumosa*
- Axillary leaves exauriculate . . . 12. *fuertesii*
- Rhizophores ventral, axillary; stems not articulate:
- Stems rather stout, about 1 mm. in diam.:
- Lateral leaves ovate, subacute:
- Lateral leaves ciliate; median leaves acuminate or shortly aristate . . . 13. *leonardi*
- Lateral leaves denticulate; arista of median leaves more than half length of lamina:
- Sporophylls dimorphous . . . 14. *plumieri*
- Sporophylls not dimorphous . . . 15. *krugii*
- Lateral leaves oblong, rounded at apex, denticulate; sporophylls not dimorphous . 16. *denudata*

Stems filiform, less than 0.5 mm. in diam.:

Leaves hairy on the upper surface:

Median leaves auriculate, more than half
as long as lateral leaves; lateral leaves with
stiff texture, remaining flat (Jamaica) . 17. *hispida*

Median leaves exauriculate, less than half as
long as lateral leaves; lateral leaves with
delicate texture, sometimes with margin
inrolled (Cuba, I. of Pines, Hispaniola) . 18. *plagiochila*

Leaves glabrous on both surfaces:

Median leaves auriculate:

Lateral leaves subacute 20. *heterodonta*

Lateral leaves obtuse. 21. *serpens*

Median leaves exauriculate:

Median leaves subacute, ovate; lateral
leaves denticulate 22. *prasina*

Median leaves acute to aristate:

Lateral leaves ovate-oblong:

Arista of median leaves more than
half as long as lamina; median
leaves ovate; lateral leaves denti-
culate 23. *tenella*

Arista of median leaves less than
half as long as lamina; median
leaves ovate-lanceolate:

Median and lateral leaves strongly
ciliate 24. *armata*

Median and lateral leaves denticu-
late or ciliolate 25. *bracei*

Lateral leaves broadly elliptic:

Lateral leaves denticulate 26. *rotundifolia*

Lateral leaves ciliate 27. *ovifolia*

1. ***Selaginella pauciciliata*** Hieron. in Hedwigia lviii: 284 (1917).

Selaginella rupestris sensu Griseb., Cat. Pl. Cub.: 271 (1866); non Spring.—Sauvalle in An.
Acad. Habana viii: 413 (1872).

CUBA. Without precise locality, *Wright 1820* (syntype-collection; BM); bare rocky
places in woods, Holguin, Oriente, *Wright 20* (syntype-collection; NY).

Geographical range: endemic in eastern Cuba.

2. ***Selaginella umbrosa*** [Regel, Gartenflora iv: 314 (1855), *nom. nud.*] Lemaire ex
Hieron. in Engl. & Prantl, Nat. Pflanzenfam. i, 4: 683, fig. 404 (1901).

Lycopodium umbrosum Lemaire ex Kunze in Linnaea xxiii: 292 (1850), *nom. synonym.*; non *L.*
umbrosum Bory ex Willd. (1810).

Selaginella erythropus sensu Jenman, Ferns Brit. W. Ind.: 401 (1909); non Spring.

Selaginella lemairei Hieron. in Hedwigia lviii: 287 (1917), *nom. illegit.*

BARBADOS. Caves and gullies, St. John's Parish, *Jenman* (K; NY).

Geographical range: Yucatan and British Honduras to Colombia; Barbados and Tobago.

This species is common in cultivation, and possibly it is an introduction in Barbados and Tobago. It appears, however, to be quite common in the latter island, as several collectors have gathered it there.

3. *Selaginella convoluta* (Arn.) Spring in Mart., Fl. Brasil. i, 2: 131 (1840).—Griseb., Cat. Pl. Cub.: 271 (1866).

Lycopodium convolutum Arn. in Mem. Werner. Nat. Hist. Soc. v: 199 (1824); in Mém. Soc. Hist. Nat. Par. i: 347 (1824).

Selaginella lepidophylla sensu Sauvalle in An. Acad. Habana viii: 413 (1872); non Spring.

Selaginella longispicata Underw. apud Millsp. in Publ. Field Columb. Mus., Bot. Ser. i: 287, t. 10 (1896).

Selaginella longispicata var. *subintegrifolia* Hieron. in Hedwigia lviii: 286 (1917).

CUBA. Without precise locality, *Wright* 938 *pro parte* (NY); Gamboa, Oriente, *Ekman* 14951 (BM; NY).

HISPANIOLA. Rio Mao, Monción, Prov. Monte Cristi, c. 200 m., *Ekman* 12607 (K); ravines, Mao, Prov. Santiago, 1–300 m., *Abbott* 1035 (NY); near Mao Adentro, Valle del Cibao, Prov. Santiago, c. 100 m., *Ekman* 13101 (K).

Geographical range: Yucatan, Guatemala, Cuba and Hispaniola, south to Paraguay and Bolivia.

4. *Selaginella microdendron* Bak. in Journ. of Bot. xxiii: 116 (1885); Handb. Fern-Allies: 100 (1887).—Hieron. in Hedwigia lviii: 285 (1917).

Selaginella sulcangula sensu Spring in Mém. Acad. R. Belg. xxiv: 163 (1850) *pro parte*, quoad pl. jamaic.; non Spring sensu orig.—Fée, Mém. Fam. Foug. xi: 134 (1866).

Selaginella cuspidata sensu Griseb., Fl. Brit. W. Ind. Is.: 645 (1864); non Link.—Sauvalle in An. Acad. Habana viii: 413 (1872).—*Jenman*, Ferns Brit. W. Ind.: 402 (1909).—Hieron., tom. cit.: 286 (1917).

Selaginella harrisii Underw. & Hieron. apud Hieron. in Urb., Symb. Antill. vii: 162 (1912).

CUBA. *Wright* 938 *pro parte* (ex Hieron.), 3910 (BM; K, type).

JAMAICA. Without precise locality, *Purdie* (BM), *Wilson* (BM), *Jenman* (NY); Whitfield Hall, 900 m., *Harris* 7587 (BM; NY), *Underwood* 2480 (NY), 2508 (NY), *Miss Taylor* (K), *Harris* (K); Green River Valley, *Underwood* 1520 (NY); 'Old England', below Cinchona, *Underwood* 1633 (NY); Farm Hill Works, *Orcutt* 5184 (K; NY); Farm Hill, *Orcutt* 3603 (BM; K); banks of Negro R., Blue Mts., *Purdie* (K).

Geographical range: south-eastern Mexico, British Honduras, Cuba and Jamaica.

The type-collection, *Wright* 3910 from Cuba, appears to represent a slender state of the species.

5. *Selaginella flabellata* (L.) Spring in Flora xxi: 198 (1838); in Bull. Acad. Brux. x, 1: 225 (1843).—Griseb., Fl. Brit. W. Ind. Is.: 646 (1864).—Fée, Mém. Fam. Foug. xi: 134 (1866).—Husnot, Cat. Crypt. Antill. Franç.: 58 (1870).—Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 151 (1897).—Duss, Fl. Crypt. Antill. Franç.: 128

(1904).—Jenman, Ferns Brit. W. Ind.: 402 (1909).—Boldingh, Fl. Dutch W. Ind.: 11 (1909).—Hieron. in *Hedwigia* lviii: 289 (1917).

Muscus squamosus, erectus Plum., Descr. Pl. Amer.: 35, t. 24 fig. a (1693): *Traité des Fougères*: t. 43 (1705).

Muscus squamosus, ramosissimus, erectus Plum., Nov. Pl. Amer., Cat.: 16 (1703).

Lycopodioides dentatum erectum filicinum, caule tereti ramosissimo Dillen., Hist. Musc.: 468, t. 65 fig. 5 (1741).

Trispermium erectum spicis triangularibus Hill, Gen. Nat. Hist. ii: 113 (1751).

Lycopodium flabellatum L., Sp. Pl. ii: 1105 (1753).

Selaginella flabellata var. *laxa* A. Braun in Ann. Sci. Nat., Sér. 5, Bot. iii: 278 (1865).

Lycopodioides flabellatum (L.) Kuntze, Revis. Gen. Pl. ii: 824 (1891).

Selaginella flabellatiformis Hieron., tom. cit.: 293 (1917).

ST. THOMAS. Eggers 488 (ex Krug).

SABA. Boldingh 1778 aB and 2206 aB (ex Boldingh and Hieron.).

ST. KITTS. Without precise locality, Masson (BM), Rodger 15 (BM), 16 (BM), 21 (BM), 23 (BM), 25 (BM); slopes of Mt. Misery, 400–750 m., Box 258 (BM), Rodger 9 (BM), 10 (BM), 13 (BM), 14 (BM), 19 (BM).

NEVIS. Mt. Nevis, Rodger 31 (BM), 32 (BM), 33 (BM), 34 (BM), 37 (BM), 38 (BM), 40 (BM), 41 (BM), 43 (BM), 44 (BM), 45 (BM).

MONTSERRAT. Soufriere neighbourhood, 240–360 m., Torlesse & Mansell (BM); woods near Chance's Pond, 820 m., Howard 11903 (BM).

GUADELOUPE. L'Herminier (BM).

DOMINICA. Without precise locality, Rodger 46 (BM), 47 (BM), Fothergill (BM); Providence, 540 m., Gregory (BM); Roseau, Crawford (BM); Laudat, Ramage (BM); waterfalls of Massacre R., between Sylvania and Mt. Joy, 500 m., Hodge 1368 (BM).

MARTINIQUE. Kohaut in Sieber, Fl. mixta 323 (BM), von Rohr 130 (BM).

ST. LUCIA. Roseau-Milette Ridge, 480 m., Box 509 (BM); source of Canaries R., c. 600 m., Box 457 (BM); Upper Roseau R., 330 m., Box 467 (BM); Ravine Poisson, 60–180 m., Box 424 (BM); woods along Soufriere-Fond St. Jacques road, Howard 11573 (BM).

ST. VINCENT. Caley (BM), Smith 119 (BM).

GRENADA. Without precise locality, Sherring 23 (BM), 98 (BM); St. Georges-Etang road, 300–600 m., Totton & Gracie (BM); woods south of the Grand Etang, Howard 10673 (BM).

Geographical range: confined to the Lesser Antilles.

S. flabellatiformis Hieron. seems to be only a state induced by cultivation in green-houses. Hieronymus gave the locality as 'vielleicht aus Borneo', but no species like this is known from Borneo.

Fée reported *S. flabellata* as collected in Jamaica by de Tussac, but it hardly seems possible that so conspicuous a species can have been overlooked by all subsequent collectors and a mistake is likely. Krug's record from St. Thomas is not mentioned by Maxon in *Scientific Survey of Porto Rico and the Virgin Islands* vi (1926) and may also be an error.

Baker and other authors have placed under *S. flabellata* many species which are now separated. Specimens labelled *S. flabellata* from Trinidad are mostly *S. hartii* Hieron. and those from Central and South America largely *S. anceps* C. Presl.

6. *Selaginella confusa* Spring in Flora xxi: 218 (1838); in Bull. Acad. Brux. x, 1: 140 (1843); in Mém. Acad. R. Belg. xxiv: 94 (1850).—Jenman, Ferns Brit. W. Ind.: 391 (1909).—Hieron. in Hedwigia lviii: 303 (1917).

Lycopodium ornithopodioides sensu Sw., Synops. Filic.: 184 (1806) pro parte, quoad pl. ind. occ.; non L.

? *Lycopodium patulum* Sw., op. cit.: 184, 411 (1806).

? *Selaginella patula* (Sw.) Spring in Bull. Acad. Brux. x, 1: 141 (1843) excl. syn.; in Mém. Acad. R. Belg. xxiv: 96 (1850) pro parte.

Selaginella caribensis Jenman in Journ. of Bot. xxiv: 273 (1886); Ferns Brit. W. Ind.: 390 (1909).

Selaginella porelloides sensu Jenman, op. cit.: 391 (1909); non Spring.

Selaginella wilsoni Hieron., tom. cit.: 308 (1917).

Selaginella wilsoni forma *rigidiuscula* Hieron., tom. cit.: 310 (1917).

CUBA. Sierra Nipe, near Woodfred, Oriente, 450–550 m., *Shafer* 3166 (BM; NY); Pico Turquino, Oriente, *Leon* 11241 (NY); Arroyo Cimarron, Trinidad Mts., Santa Clara, 470 m., *Britton* 5111 (NY); Arroyo de Manaca, Herradura, Trinidad Mts., 320 m., *Britton* 5030 (NY); Siguanea, Trinidad Mts., Santa Clara, 400 m., *Britton & Wilson* 4913 (NY), 4978 (BM; NY); on a rock near the falls of the Caracusey R., Banao Mts., Santa Clara, *Leon & Roca* 7907 (NY).

JAMAICA. Without precise locality, *Swartz* (BM), *Jenman* (BM; NY); Morce's Gap, *Clute* 60 (NY); Morce's Gap to Vinegar Hill, 1,175–1,500 m., *Maxon & Killip* 1304 (BM; NY); Morce's Gap to Cinchona, *Underwood* 271 (NY), 1218 (NY); Chester Vale, near Newcastle, Blue Mts., *Carhart* (NY); Blue Mountain, *Orcutt* 3169 (K), 5307 (K); Blue Mountain Peak, 1,800–2,100 m., *Maxon & Killip* 1134 (NY), 1153 (NY), *Underwood* 1502 (NY), 2546 (NY), 2584A (NY); Portland, *Orcutt* 5157 (K); Abbey Green, *Orcutt* 5294 (K).

Geographical range: confined to Cuba and Jamaica.

Jenman's specimens of *S. caribensis* at New York and the British Museum do not differ from *S. confusa*.

Hieronymus (tom. cit.: 311) refers *Lycopodium patulum* to *S. albo-nitens* Spring, i.e. *S. tenella* (Beauv.) Spring, but the type of *L. patulum* at Stockholm seems to represent *S. confusa* so far as I can judge from a photograph.

7. *Selaginella laxifolia* Bak. ex Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 151 (1897).—Hieron. in Hedwigia lviii: 306 (1917).

Selaginella confusa sensu Krug, loc. cit. (1897) pro parte; non Spring.

PUERTO RICO. Las Mesas, near Mayaguez, 300–350 m., *Leustohn* 48 (BM), *Stevens* 427 (NY), *Heller* 4587 (BM; NY); Quebrado de Limones, near Mayaguez, *Britton & Marble* 672 (NY); near Maricao, *Sintenis* 399 (type-collection; BM; K; NY), *Stevens* 1878 (NY), *Hioram* (BM; NY); La Chiquita, near Maricao, 650–700 m., *Britton & Cowell* 4278 (NY); Rio de Maricao, *Hess* 531 (NY), *Britton, Stevens & Hess* 2458A (K; NY), *Britton & Cowell* 4211 (NY); near Utuado, *Sintenis* 6589 (K); near Pepino, *Sintenis* 5837 (K; NY); Sarer, *Johnston* 2069 (NY).

Geographical range: endemic in Puerto Rico.

This species replaces *S. confusa* in Puerto Rico, and further material may show that it cannot be maintained as distinct.

8. *Selaginella flabellum* (Desv.) Spring in Bull. Acad. Brux. x, 1: 234 (1843).

Lycopodium flabellum Desv. apud Poir. in Encycl. Méth., Bot., Suppl. iii: 558 (1814).—Hook. & Grev. in Hook., Bot. Misc. ii: 385 (1831).

Selaginella porelloides sensu Spring in Mém. Acad. R. Belg. xxiv: 97 (1850) pro parte, excl. syn. Lam.; non Spring sensu orig.—Fée, Mém. Fam. Foug. xi: 133 (1866) pro parte.

Selaginella mayerhoffii Hieron. in Hedwigia lviii: 295 (1917).

Selaginella mayerhoffii var. *nectouxii* Hieron., tom. cit.: 297 (1917).

HISPANIOLA. Without precise locality, *Nectoux* (BM; P, type); Caille à Croix, Dépt. de l'Artibonite, *Leonard* 7912 (BM); Cañada Tomesloma, Prov. Barahona, 600 m., *Fuertes* 955 (BM).

Geographical range: endemic in Hispaniola.

9. *Selaginella subcaulescens* Bak. in Journ. of Bot. xxii: 277 (1884); Handb. Fern-Allies: 79 (1887).—Hieron. in Hedwigia lviii: 301 (1917).

Selaginella substipitata sensu Griseb., Cat. Pl. Cub.: 271 (1866); non Spring.

Selaginella haenkeana sensu Sauvalle in An. Acad. Habana viii: 413 (1872); non Spring.

Selaginella albo-nitens sensu Urb., Symb. Antill. iv: 69 (1903); non Spring.

Selaginella sintenisii Hieron., tom. cit.: 299 (1917).

CUBA. Without precise locality, *Wright* 1822 (BM; K, type; NY); near Monte Verde, *Wright* 940 pro parte (BM); mountains of Oriente, *Hioram* (BM; NY); 'Pose-sion de Starck', S.E. of Jaguey, Yateras, Oriente, 450–525 m., *Maxon* 4440 (BM; NY); Rio Yateras, Jaguey, 600 m., *Eggers* 4889 (BM); Gran Piedra, Oriente, 1,500 m., *Shafer* 9001 (BM; NY); Gran Piedra range, Oriente, 900 m., *Clément* 2074 (BM; NY); Cooper's Ranch, base of El Yunque Mt., Baracoa, *Underwood & Earle* 983 (BM; NY); El Yunque Mt., Baracoa, on rocks, *Underwood & Earle* 649 (NY); Loma Harenales, south of Sumidero, Pinar del Rio, *Shafer* 13794 (NY).

JAMAICA. Without precise locality, *Jenman* (BM; NY); near Troy, in Cockpit Country, 450–660 m., *Underwood* 2846 (BM; NY), 3320 (NY); road between Porto Antonio and St. Margaret's Bay, *Underwood* 1724 (NY).

PUERTO RICO. Maricao, *Hioram* 37 (BM); Los Angeles, near Utuado, *Sintenis* 5912 (BM; NY); Utuado, *Underwood & Griggs* (NY); on rock, Collazo R., *Britton* 8623 (BM; NY); Guajataca, Sierra de Lares, *Sintenis* 6245 (K).

Geographical range: confined to Cuba, Jamaica and Puerto Rico.

10. *Selaginella substipitata* Spring in Bull. Acad. Brux. x, 1: 227 (1843).—Fée, Mém.

Fam. Foug. xi: 135 (1866).—Duss, Fl. Crypt. Antill. Franç.: 127 (1904).—Jenman, Ferns Brit. W. Ind.: 395 (1909).—Boldingh, Fl. Dutch W. Ind.: 12 (1909).

Selaginella portoricensis A. Braun in Ann. Sci. Nat., Sér. 5, Bot. iii: 288 (1865).—Bak. in

Ann. Bot. v: 170 (1891).—Urb., Symb. Antill. iv: 70 (1903).—Jenman, op. cit.: 394 (1909).

Selaginella stolonifera sensu Husnot, Cat. Crypt. Antill. Franç.: 58 (1870); non Spring.

Selaginella substipitata var. *compacta* Kuhn ex Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 150 (1897), nom. nud.

Selaginella nashii Hieron. in Urb., Symb. Antill. vii: 490 (1913).

Selaginella sherringii Hieron. in Hedwigia lviii: 326 (1917).

HISPANIOLA. Morne Maloeuvre, Port Margot, Dépt. du Nord, 1,000–1,150 m., *Ekman* 2024 (K); Haut Piton peaks, Bassin Bleu, 630–1,500 m., *Leonard* 15158 (BM); road from Camp 1 to La Barrière Couchant, 840 m., *Nash & Taylor* 1086 (NY);

Mt. Casse, 1,050 m., *Nash* 530 (NY); Lagunas de Cenobi, Moucron, Prov. Monte Cristi, 1,100 m., *Ekman* 12714 (K).

PUERTO RICO. Without precise locality, *Sintenis* 1549 (ex Urb.); Sierra, *Blauner* 320 (BM); Adjuntas, Las Cruces, *Sintenis* 4104 (BM; K); Guaraguao Mt., near Adjuntas, *Sintenis* 4321 (BM; NY); Larco, *Sintenis* 6064 (NY); Hato Arriba, near Arecibo, *Britton* 5103 (NY); Yunque, *Stevens & Hess* 2806 (NY); Monte Torrecilla, *Britton, Cowell & Brown* 5594 (NY); Sierra de Naguabo, *Stevenson* 1597 (NY), *Shafer* 3236 (NY); Piedra Belleta, Sierra de Naguabo, *Sintenis* 1045 (K); Barrio de Maizales, Sierra de Naguabo, *Britton & Cowell* 2167 (NY); El Alto de la Bandera, *Stevens* 1564 (NY), 1637 (NY), *Britton & Shafer* 2088 (NY); between Barranquito and Barros, *Hioram* 2 (NY); El Gigante, *Stevens* 1510 (NY); Mt. Morales, near Utuado, *Britton & Marble* 1080 (NY); Arroyo de los Corchos, *Britton, Cowell & Brown* 5277 (NY); Indilra Baja, *Britton* 7388 (NY); Luquillo Mts., *Britton* 7609 (NY), *Heller* 4616 (NY); Monte Alegrillo, *Stevens* 2353 (NY); Mt. Mandios, near Jayuya, *Britton & Marble* 960 (NY).

SABA. Ex Boldingh.

ST. KITTS. Without precise locality, *Rodger* 22 (BM); Belmont, *Britton & Cowell* (NY); upper slopes of Mt. Misery, 750-1,110 m., *Box* 292 (BM), *s.n.* (BM); Olivees Mt., on summit, 834 m., *Box* 394 (BM); near Dos d'Ans Pond, 930 m., *Howard* 11979 (BM).

NEVIS. Mt. Nevis, 600-750 m., *Rodger* 35 (BM), 36 (BM).

MONTSERRAT. Chaners Mt., c. 600 m., *Shafer* 275 (BM; NY).

GUADELOUPE. *Beaupertuis* (ex Spring, type), *Husnot* 576 (BM), *l'Herminier* 16 (K), *s.n.* (BM).

DOMINICA. Without precise locality, *Morris* (K), *Nicholls* (K), *Hodge* 1062 (BM); Mt. Diablotin, *Lloyd* 882 (NY); Laudat, *Lloyd* 384 (NY), *Eggers* 15 (K); Imperial Road, Sylvania, 549 m., *Hodge* 3833 (BM); Castle Bruce track, north of Trois Pitons, c. 600 m., *Hodge* 1225 (BM); Morne Trois Pitons, 763-1,400 m., *Hodge* 1415 (BM); Valley of Desolation, *Hodge* 1945 (BM).

MARTINIQUE. *Jenman* (NY).

ST. LUCIA. Summit of Morne Gimie, 943 m., *Box* 1805 (BM).

ST. VINCENT. Without precise locality, *Smith* 1377 (ex Bak.); summit of Soufriere, 900 m., *Howard* 11217 (BM).

GRENADA. Without precise locality, *Sherring* 160 (BM), *Jenman* (NY); Heights of Grand Etang woods, *Broadway* 1662 (BM; NY); Feddon's Camp, 600 m., *Smith* 114 (K).

Geographical range: West Indies from Hispaniola eastwards to Trinidad.

S. karsteniana A. Braun and *S. rigida* Bak. from northern South America are closely allied to and perhaps conspecific with this West Indian species.

11. *Selaginella plumosa* (L.) C. Presl, Bot. Bemerk.: 153 (1844) excl. var. β .—Alston in Journ. of Bot. lxi: 254 (1931).

Muscus repens, squamosus Plum., Descr. Pl. Amer.: 36, t. 24 fig. b (1693).

Muscus squamosus, ramosissimus, repens Plum., Nov. Pl. Amer., Cat.: 16 (1703).

Muscus squamosus repens Plum., Traité des Fougères: t. 43 (1705).

Lycopodium plumosum L., Sp. Pl. ii: 1105 (1753) excl. syn. Breyn.

Sphagnum 5. *Scandens diffusum, foliolis cordato-acuminatis rarioribus amplexantibus* Browne, Civ. & Nat. Hist. Jam.: 84 (1756).

Lycopodium stoloniferum Sw., Nov. Gen. & Sp. Pl.: 138 (1788); Fl. Ind. Occ. iii: 1576 (1806) excl. syn. Breyn.

Gymnogynum domingense Beauv. in Mag. Encycl. ix, 5: 480 (1804); Prodr. Aethéog.: 103 (1805).

Lycopodium domingense (Beauv.) Leman in Dict. Sci. Nat. xxvii: 426 (1823).

Lycopodium poeppigianum Hook. & Grev. in Hook., Bot. Misc. ii: 393 (1831).

Selaginella stolonifera (Sw.) Spring in Flora xxi: 193 (1838).—Griseb., Cat. Pl. Cub.: 271 (1866).—Fée, Mém. Fam. Foug. xi: 135 (1866).—Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 150 (1897).

Selaginella stolonifera var. *domingensis* Spring, loc. cit. (1838).

Selaginella stolonifera var. *poeppigiana* (Hook. & Grev.) Spring, loc. cit. (1838).

Selaginella cuspidata sensu Griseb., loc. cit. (1866); non Link.

CUBA. Without precise locality, *Wright* 938 *pro parte* (NY), 939 (NY); Sumidero, *Poeppig* (BM); Chemin Filantropia, Santiago de Cuba, 600 m., *Clément* 705 (BM); Rio Barigua, near Santiago, *Hamilton* 266 (NY); near Baracoa, Santiago, *Pollard & Palmer* 189 (NY); Cooper's Ranch and base of El Yunque Mt., Baracoa, *Underwood & Earle* 878 (NY); hills about Tabajo, base of El Yunque Mt., Oriente, *Shafer* 7714 (NY); Rio Yumuri Valley, Sabaua, Baracoa, Oriente, *Leon* 17242 (BM); Sierra de Nipe, Oriente, *Ekman* 6717 (BM); The Pinales, S.E. of Paso Estancia, Oriente, *Shafer* 1728 (NY); lower valley of Rio Mièl, Oriente, *Shafer* 4337 (NY); near Piedra Garda, Oriente, *Shafer* 3303 (NY); valley of Rio Matamoros, south of Holguin, Oriente, *Shafer* 1250 (NY); woods near base of Loma Mensura, Oriente, 680 m., *Shafer* 3851 (NY); Ensenada de Mora, *Britton, Cowell & Shafer* 12975 (NY); Hoyo de Manicargua, Santa Clara, *Britton & Wilson* 4708 (NY); near Guanabana, Trinidad Mts., Santa Clara, 260 m., *Britton, Earle & Wilson* 4753 (NY); Habanilla Falls, Trinidad Mts., Santa Clara, *Britton, Earle & Wilson* 4808 (NY); Cieneguita, near Cienfuegos, Santa Clara, *Combs* 303 (NY); wooded ravine east of Matanzas, *Britton & Wilson* 449 (NY); on serpentine, Canasi, Matanzas, *Roig & Leon* 3414 (NY); near Madruga, *Britton & Shafer* 715 (NY); near Mananas, *Leon* 716 (NY); Rio San Miguel from Volador to Mal Paso, *Wilson* 9373 (NY); Santa Catalina, Pinar del Rio, *Hermann* 3483 (NY); La Ermita, *Hioram* 4942 (NY); Rio Yateras, *Eggers* 5070 (NY).

JAMAICA. *Orcutt* 10036 (K), 10068 (K).

HISPANIOLA. Without precise locality, *Plumier* (Ox), *Swartz* (BM), *Jacquemont* (NY), *Wright, Parry & Brummel* 35 (NY); vicinity of Anse Galette, Gonave I., *Leonard* 3037 (NY); dry banks of Boyoton Source, near Port au Prince, *Leonard* 10119 (NY); bank of Mole R., near Mole St. Nicolas, *Leonard* 13131 (NY); Bombardopolis Road, near Mole St. Nicolas, *Leonard* 13251 (NY); vicinity of Ennery, Dépt. de l'Artibonite, *Leonard* 9008 (NY), 9019 (NY); foothills, Azua, 300 m., *Rose, Fitch & Russell* 3982 (NY); near Santo Domingo City, *Rose, Fitch & Russell* 3781 (NY); on bank along brook, La Brande, 210 m., *Nash & Taylor* 1624 (NY).

PUERTO RICO. Rio Piedras, *Stevenson* 5651 (NY); Naguabo, cultivated, *Sintenis* 5441 (BM).

ST. THOMAS. *Nelthrop* 9 (NY).

Geographical range: confined to the Greater Antilles from Cuba to Puerto Rico and the Virgin Islands.

This species is the Greater Antillean representative of the widespread tropical *S. marginata* (Humb. & Bonpl. ex Willd.) Spring.

Baker has applied the name *S. plumosa* to a vast mixture of species from Asia, of which the best-known is the common Himalayan species *S. monospora* Spring.

12. ***Selaginella fuertesii*** Hieron. in Urb., Symb. Antill. vii: 164 (1912).

HISPANIOLA. Near Barahona, 900 m., *Fuertes* 537 (type-collection; BM).

Geographical range: endemic in Hispaniola.

This species is apparently allied to the articulate species of South and Central America.

13. ***Selaginella leonardi*** O. C. Schmidt in Fedde, Repert. Sp. Nov. xx: 155 (1924).

JAMAICA. Near Troy, 600 m., *Perkins* 909 (ex Schmidt).

HISPANIOLA. Vicinity of Mission, Fonds Varettes, c. 1,000 m., *Leonard* 3757 (type-collection; BM; NY; US); vicinity of San Francisco de Macoris, Prov. Pacificador, 400–1,000 m., *Abbott* 2137 (BM); east side, Morne la Selle, 1,650 m., *Holdridge* 1989 (BM); waterfall on limestone tuff, Ganthier Source-Courtz, Massif de la Selle, 1,250 m., *Ekman* 7754 (K); on limestone, Morne la Visite, 2,050 m., *Ekman* 1408 (K).

Geographical range: confined to Hispaniola and perhaps Jamaica.

14. ***Selaginella plumieri*** Hieron. in Urb., Symb. Antill. vii: 488 (1913).

CUBA. Without precise locality, *Wright* 940 *pro parte* (NY); El Yunque Mt., Baracoa, *Underwood & Earle* 942 (BM; NY), 1019 (NY), 1038 (NY), *Pollard & Palmer* 140 (NY); Cooper's Ranch, base of El Yunque Mt., Baracoa, *Underwood & Earle* 705 (BM; NY), 706 (NY); Bahia Honda to El Rosario, Pinar del Rio, *Shafer* 12017 (K; NY); banks of Upper Taco Taco River, Raugel, Pinar del Rio, *Leon* 12683 (NY); Rio San Miguel from Volador to Mal Paso, *Wilson* 9375 (NY).

HISPANIOLA. Wet woods, Las Filipinas, Prov. Barahona, 600 m., *Fuertes* 1108 (BM; NY); Prov. La Vega, 1,300 m., *Fuertes* 1773 (BM; NY); Loma la Vieja, Constanza, Prov. La Vega, 2,000 m., *Ekman* 14055 (K); near Furcy, 1,300 m., *Leonard* 4501 (NY); Los Asparejos, Moncion, Prov. Monte Cristi, 1,800 m., *Ekman* 12781 (K); Morne Melanga, Massif de la Caselle, Port au Prince, 1,200 m., *Ekman* 5897 (K).

Geographical range: confined to Cuba and Hispaniola.

15. ***Selaginella krugii*** Hieron. in Urb., Symb. Antill. iii: 526 (1903).—Urb., op. cit. iv: 70 (1903).—Maxon in Sci. Surv. Porto Rico & Virgin Is. vi: 519 (1926).

Selaginella portoricensis sensu Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 151 (1897) *pro parte*; non A. Braun.

PUERTO RICO. Sierra, *Blauner* 320 (NY), 320A (BM); Sierra de Luquillo, *Sintenis* 1548 (BM; NY), *Heller* 1091 (NY), 4616 (NY), *Wilson* 92 (NY), 134 (NY), *Hioram* 384 (NY); Catalina-Yunque trail, Luquillo Mts., 600 m., *Britton & Bruner* 7575 (NY); El Yunque, Rio Piedras, *Walcott* 2809 (NY); Monte el Duque, Sierra de Naguabo,

Shafer 2233 (NY); S.W. side of Loma Francesca to falls of Rio Prieto, Sierra de Naguabo, 300–600 m., *Shafer 3208* (NY); Rio Prieto, Sierra de Naguabo, 690–1,035 m., *Shafer 3625* (NY).

Geographical range: endemic in Puerto Rico.

16. *Selaginella denudata* (Willd.) Spring in Flora xxi: 212 (1838); in Bull. Acad. Brux. x, 1: 138 (1843); in Mém. Acad. R. Belg. xxiv: 84 (1850).

Lycopodium denudatum Willd. in L., Sp. Pl., ed. 4, v: 36 (1810).

Lycopodium didymostachyum Desv. apud Poir. in Encycl. Méth., Bot., Suppl. iii: 553 (1814).

Selaginella didymostachya (Desv.) Spring in Bull. Acad. Brux. x, 1: 144 (1843); in Mém. Acad.

R. Belg. xxiv: 130 (1850).—Fée, Mém. Fam. Foug. xi: 134 (1866) excl. var.

Selaginella didymostachya var. *subintegerrima* Spring, tom. cit.: 131 (1850).

Selaginella flexuosa sensu Griseb., Fl. Brit. W. Ind. Is.: 645 (1864); non Spring.

Selaginella didymostachya var. *integerrima* sensu Jenman, Ferns Brit. W. Ind.: 395 (1909); non Spring.

Selaginella didymostachya var. *densa* Jenman, loc. cit. (1909).

JAMAICA. Without precise locality, *Herb. Desvauux* (P), *Jenman 78* (NY), *Macfadyen* (K); Cinchona to Morce's Gap, 1,500 m., *Underwood 1219* (NY); Morce's Gap to Vinegar Hill, 1,175–1,500 m., *Maxon & Killip 707* (BM; NY), *1309* (BM; NY), *Underwood 2598A* (NY); Hardware Gap, Blue Mts., c. 1,200 m., *Rendle 143* (BM); Silver Hill Gap to Hardware Gap, *Maxon & Killip 1262* (NY); Mabess R., *Harris 7491* (NY), s.n. (BM); Mt. Moses, *Bot. Dept. Jamaica* (BM); Moody's Gap, 900 m., *Underwood 1581* (NY), *2141* (NY), *E. Britton 3376* (NY); Cuna-Cuna Gap, 750 m., *Clute 290* (NY), *Underwood 2724* (NY); between House Hill and Cuna-Cuna Gap, St. Thomas, 550–725 m., *Maxon 8928* (NY); road to Vinegar Hill, *Underwood 1365* (NY); near Vinegar Hill, 360 m., *Maxon 2777* (NY); Tweedside, 600–900 m., *Underwood 2044* (NY), *2056* (NY), *2099* (NY); Chester Vale, near Newcastle, Blue Mts., *Carhart* (NY); near St. Helen's Gap, St. Andrew, 1,475 m., *Maxon & Killip 981* (NY); east of Seamen's Valley, Portland, 200–425 m., *Maxon & Killip 250* (NY).

Geographical range: endemic in Jamaica.

This species was recorded from Hispaniola by Fée (*de Tussac*, as *S. didymostachya* var. *integerrima* Spring ex Fée) and from Guadeloupe by Urban (*Symb. Antill. ix: 392* (1925)). Both records are presumably erroneous.

The affinity of *S. denudata* appears to be with *S. faucium* Liebm. (Mexico), *S. tarapotensis* Bak. (Peru) and *S. flexuosa* Spring (southern Brazil).

17. *Selaginella hispida* (Willd.) A. Braun ex Urb., *Symb. Antill. ix: 394* (1925).

Lycopodium hispidum Willd. in L., Sp. Pl., ed. 4, v: 35 (1810).—Spreng. in L., *Syst. Veg.*, ed. 16, iv, 1: 17 (1827).

Selaginella swartzii Spring in Bull. Acad. Brux. x, 1: 140 (1843).—Alston in *Journ. of Bot. lxi: 257* (1931); in *Proc. Nat. Inst. Sci. Ind. xi: 231* (1945).

Selaginella lasiophylla A. Braun ex Maxon in *Journ. Wash. Acad. Sci. xiv: 199* (1924) pro parte, quoad pl. jamaic.

JAMAICA. Without precise locality, *Swartz* (type-collector; BM; G); near Ipswich, St. Elizabeth, 200–300 m., *Maxon & Killip 1508* (BM; NY); Cooks Bottom, north of Ipswich, St. Elizabeth, 400–450 m., *Maxon & Killip 1465* (BM; NY); near Troy,

600 m., *Perkins 1370* (K); vertical limestone cliff, Manchester, *Britton 3743* (NY); Parish of Manchester, *Britton* (BM); Schwallenberg, *Orcutt 3945* (BM).

Geographical range: endemic in Jamaica.

Sprengel's record of *Lycopodium hispidum* from Hispaniola may refer to *S. plagiochila*.

18. *Selaginella plagiochila* Bak. in Journ. of Bot. xxi: 212 (1883).

Selaginella lasiophylla A. Braun [in Sitzungsber. Ges. Naturf. Fr. Berl. 1863: 8 (1863), *nom. nud.*] ex Maxon in Journ. Wash. Acad. Sci. xiv: 199 (1924) excl. pl. jamaic.

Selaginella confusa sensu Griseb., Cat. Pl. Cub.: 271 (1866); non Spring.—Sauvalle in An. Acad. Habana viii: 413 (1872).

Selaginella flexuosa sensu Griseb., loc. cit. (1866); non Spring.

? *Selaginella pilosiuscula* Kuhn ex Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 151 (1897), *nom. nud.*

CUBA. Without precise locality, *Wright 1825 pro parte* (NY); near Monte Verde, *Wright 942* (BM; K, type; NY); El Yunque Mt., Baracoa, *Underwood & Earle 676* (NY), 696 (NY), 906 (BM; NY); Sierra de Cabra, Pinar del Rio, *Britton & Cowell 7291* (NY), 9791 (NY).

ISLE OF PINES. Moist bank of arroyo a few miles east of Los Indios, *Jennings 367* (NY); near Los Indios, *Britton & Wilson 14257* (BM; NY); Sierra de Cañada, *Britton & Wilson 14418* (BM; NY).

HISPANIOLA. Los Naranjos, trail Laguna to Rincon, Prov. Samaná, c. 250 m., *Ekman 15020* (K).

Geographical range: confined to Cuba, the Isle of Pines and Hispaniola.

The pubescent upper surface of the lateral leaves, combined with the minute ovate median leaves, is distinctive.

I have not seen *Torralbas 352*, the specimen cited for Kuhn's *S. pilosiuscula*, but probably it is referable to *S. plagiochila* as this is the only Cuban species with a pubescent surface. José I. Torralbas (1842–1903) was a Cuban botanist who sent a small collection to Urban. He is mentioned in Leon's account of the botanical exploration of Cuba (Mem. Soc. Poey iii: 198 (1918)).

19. *Selaginella cordifolia* (Desv.) Spring in Bull. Acad. Brux. x, 1: 228 (1843).

Lycopodium cordifolium Desv. apud Poir. in Encycl. Méth., Bot., Suppl. iii: 548 (1814).

Selaginella patula var. *cordifolia* (Desv.) Griseb., Cat. Pl. Cub.: 271 (1866).

Selaginella ottonis Bak. in Journ. of Bot. xxiii: 179 (1885).

Selaginella serpens sensu Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 150 (1897) *pro parte*; non Spring.

Selaginella serpens var. *acutiuscula* Hieron. in Urb., Symb. Antill. ix: 392 (1925), *nom. nud.*

CUBA. Without precise locality, *Otto 231* (K); vicinity of Baracoa, *Pollard & Palmer 253* (BM; NY); Rio Toa, Baracoa, Oriente, *Ekman 4348* (BM; NY); Cooper's Ranch, base of El Yunque Mt., Baracoa, *Underwood & Earle 876* (BM; NY); hills about Tabajo, base of El Yunque Mt., *Shafer 7967* (NY); Arroyo Bayaja, south of Nagua, Sierra Maestra, 200–400 m., *Ekman 14771* (BM; NY).

HISPANIOLA. Barahona, 700 m., *Fuertes 975* (BM; NY).

PUERTO RICO. Without precise locality, *Herb. Desvaux* (P, type); Sierra de Naguabo, *Sintenis 5431* (BM; NY); vicinity of Barranquitos, *E. G. Britton 5585* (BM;

NY), *Britton & Brown* 6625 (BM; NY); Dos Bocas, above Corozal, *Britton & Chardon* 8937 (BM; NY); 22 km. south of San Juan, *Heller* 674 (BM; NY); bank near Cayey, *Britton* 8545 (NY); bank near Aguas Buenas, *Britton* 9191 (NY); rocky bank near Comario, *Barker* 10 (NY).

Geographical range: Greater Antilles except Jamaica, and northern Brazil (?).

The type of *S. ottonis* (*Otto* 231) at Kew is very scrappy but shows clearly the cordate ciliate leaf-base of *S. cordifolia*. Baker had himself written 'cf. *S. cordifolia*' on the sheet.

20. *Selaginella heterodonta* (Desv.) Hieron. in Urb., *Symb. Antill.* ix: 392 (1925).

Lycopodium heterodonton Desv. apud Poir. in *Encycl. Méth., Bot., Suppl.* iii: 548 (1814).

Selaginella sarmentosa A. Braun in *Index Sem. Hort. Bot. Berol.* 1857, App.: 14 (1858?); in

Ann. Sci. Nat., Sér. 4, Bot. xiii: 62 (1860).

Selaginella patula sensu Griseb., *Fl. Brit. W. Ind.* Is.: 645 (1864); non Spring.—Jenman, *Ferns*

Brit. W. Ind.: 400 (1909).

Selaginella brevicaulis Bak. in *Journ. of Bot.* xxi: 83 (1883).

Selaginella conferta Bak., op. cit. xxii: 113 (1884); non *S. conferta* Moore (1861).

Selaginella setigera Jenman in *Journ. of Bot.* xxiv: 273 (1886); *Ferns Brit. W. Ind.*: 400 (1909).

Selaginella microphylla sensu Krug apud Urb. in *Engl., Bot. Jahrb.* xxiv: 150 (1897); non Spring.

CUBA. Without precise locality, *Guthnick* 4 (BM), *Wright* 940 (NY), 3909 (BM; NY); Monte Verde, *Wright* 5 (BM); near Monte Verde, *Wright* 941 (K); vicinity of Camp San Benito, Oriente, 900 m., *Shafer* 4096 (NY); valley of Rio Yamaniguay, Oriente, *Shafer* 4210 (NY); Rio Macaguanigua, Oriente, *Shafer* 3967 (NY); Cooper's Ranch, base of El Yunque Mt., Baracoa, *Underwood & Earle* 877 (NY); Arroyo Trinitario, Rio Negro, Trinidad Mts., Santa Clara, 550 m., *Britton* 5206 (NY); Aguacate, Trinidad Mts., 750–850 m., *Britton* 5382 (NY), 5385 (NY); El Porvenir, Trinidad Mts., 650–750 m., *Britton & Wilson* 5286 (NY); Viñales, Pinar del Rio, *Killip* 13577 (BM), *Cuesta* 636 (NY); north of San Diego de los Baños, Pinar del Rio, *Leon* 4493 (BM; NY); Cueva del Rio San Vicente, Viñales, Pinar del Rio, *Leon & Killip* 14707 (BM; NY); Baños San Vicente, Pinar del Rio, *Britton & Gager* 7341 (BM; NY); Luiz Lazo, Pinar del Rio, *Roig* 3130 (NY); Sierra Guayaba, south of Sumidero, Pinar del Rio, *Shafer* 13853 (BM; NY); vicinity of Sumidero, *Shafer & Leon* 13646 (BM; NY), 13668 (NY).

JAMAICA. Without precise locality, *Herb. Desvieux* (P, type), *Wilson* 136 (K), *Morris* 503 (K); on sloping rock in stream-bed, Seamen's Valley, Portland, 150–250 m., *Maxon & Killip* 46 (BM; NY); Mabess R., *Harris* 7492 (BM); on rock in damp woods near Port Antonio, *Fredholm* 3124 (NY).

HISPANIOLA. Barahona, *Fuertes* 924 (BM).

Geographical range: confined to the Greater Antilles.

21. *Selaginella serpens* (Desv.) Spring in *Bull. Acad. Brux.* x, 1: 228 (1843).—Duss, *Fl. Crypt. Antill. Franç.*: 126 (1904).—Jenman, *Ferns Brit. W. Ind.*: 395 (1909).

Selago 1. *Ramosa repens, et radiculosa, spicillis quadratis* Browne, *Civ. & Nat. Hist. Jam.*: 83 (1756).

Lycopodium serpens Desv. apud Poir. in *Encycl. Méth., Bot., Suppl.* iii: 553 (1814).

Lycopodium plumosum sensu Lunan, *Hort. Jam.* ii: 304 (1844); non L.

CUBA. Without precise locality, *Wright* 941 (NY), 1821 (BM); near Baracoa, *Pollard & Palmer* 51 (NY); Cooper's Ranch, base of El Yunque Mt., Baracoa, *Underwood & Earle* 523 (BM; NY), 821 (NY), 825 (NY), 943 (BM; NY); lower valley of Rio Navas, Oriente, *Shafer* 4373 (NY); Sierra Nipe, near Woodfred, Oriente, in rocky (serpentine) arroyo, 360–550 m., *Shafer* 3577 (NY); San Diego de los Baños, Pinar del Rio, *E. G. Britton* 6837 (NY), *Britton, Earle & Gager* 6899 (NY); upper valley of Taco Taco River, Raugel, Pinar del Rio, *Leon* 12694 (NY); on cliffs, gorges of Santa Cruz R., Santa Cruz de los Pinos, Pinar del Rio, *Roca* 7408 (NY); Guane Road, Sierra de Cabra, Pinar del Rio, *Britton & Shafer* 7227 (NY); Rio Mananteales, north of Candelaria, Pinar del Rio, *Britton, Wilson & Leon* 14116 (NY); Rio Mestanza, Pinar del Rio, *Britton & Cowell* 10163 (NY); near Pinar del Rio, *Britton & Cowell* 9716 (NY); mountain, Ubero R., Sevilla Estate, near Santiago, *Taylor* 266 (NY); Jayabo Mt., Guama R., near Santiago, 645 m., *Taylor* 378 (NY); Obispo Hill, S. Spiritus, Santa Clara, *Leon* 1283 (NY); near S. Spiritus, Santa Clara, *Sergius* 2704 (BM; NY); Banao Hills, near Jayabo R., Santa Clara, *Leon & Cesareo* 4080 (NY); banks of Jayabo R., Banao Hills, *Leon & Cesareo* 4034 (NY); Loma de Canta, Banao Mts., *Leon & Clément* 5580 (NY).

JAMAICA. Without precise locality, *Herb. Desvaux* (P, type), *Swartz* (BM), *Jenman* (NY), *Wilson* (NY); Bath Fountain, *Miss Noel* (BM); Bath, *Underwood* 2824 (NY), *Clute* 48 (NY); Mansfield, near Bath, *Underwood* 2820 (NY); Bath to Cuna-Cuna Pass, 300–600 m., *Underwood* 2672 (NY); Bog Walk, *Hitchcock* 16 (NY), *Crawford* 813 (NY); Bowers Wood Road, Bog Walk, *Britton* 2613 (NY); Guava Ridge and Gordon Town, *Jenman* (NY); above Gordon Town, 450 m., *Clute* 235 (NY); near Castleton, *Underwood* 31 (NY), 32 (NY), 36 (NY), 75 (NY), 76 (NY), 80 (NY), 118 (NY), 1732 (NY), 1992 (NY); Dolphin Head, *E. G. Britton* 635 (NY); cliffs, Bagwell Gorge, *Ridley* (K); Chester Vale, near Newcastle, *Carhart* (NY); Green Island and vicinity on dry rocky hill, *Britton & Hollick* 2130 (NY).

HISPANIOLA. Premier Source, Les Roseaux, Massif de la Hotte, *Ekman* 10202 (K).

GUADELOUPE. Soufrière, *de Ponthieu* (BM); sur les rochers les plus élevés du plateau de la Soufrière, *Duss* 3753 (ex Duss); rochers au bord du Galion, *Duss* 3969 (ex Duss).

MARTINIQUE. Rochers du morne Paillasse, du morne de La Croix, près du lac des Palmistes, *Duss* 4134 (ex Duss).

Geographical range: Cuba, Jamaica, Hispaniola and Guadeloupe; reported from Martinique.

This species is well known for its daily change of colour. In the morning the leaves are bright green, but towards evening they become pale and silvery. The change of colour is due to contraction of the cell-contents of the epidermal cells away from the cuticle, which leaves a layer of air between the cuticle and the chloroplasts in the latter part of the day. The phenomenon has been described by Sussenguth (in Biol. Zentralbl. xliii: 123–129 (1923)).

22. *Selaginella prasina* Bak. in Journ. of Bot. xxii: 113 (1884).

Selaginella crassinervia sensu Griseb., Cat. Pl. Cub.: 271 (1866); non Spring.

Selaginella sp. (cum descr.) Sauvalle in An. Acad. Habana viii: 414 (1872).

CUBA. Without precise locality, *Wright 1825* (BM; K, syntype; NY); rocks on bank of R. Agabama, between Espiritu Santo and Villa Clara, *Wright 1825B* (K, syntype); rocky stream-bed, Rio San Juan, Santa Clara, *Britton, Earle & Wilson 5862* (BM; NY); Rio Mananteales, north of Candelaria, Pinar del Rio, *Britton, Wilson & Leon 14122* (BM; NY); banks of Rio Mananteales, near Soroa, *Britton, Wilson & Leon 6037* (NY); hanging from a cascade, Jayabo R., Banao Hills, *Leon 4061* (NY); on soft limestone, valley of Rio de Marianas, Havana, *Leon 4814* (NY); below the falls at Loma Boba near San José, *Smith, Hodgdon & Gonzalez 3273* (Gray).

Geographical range: endemic in Cuba.

This is separated from the other small species found in Cuba by its ovate or sub-acute (not aristate) median leaves.

23. *Selaginella tenella* (Beauv.) Spring in Bull. Acad. Brux. x, 1: 234 (1843).

Diplostachium tenellum Beauv. in Mag. Encycl. ix, 5: 481 (1804); Prodr. Aethéog.: 104 (1805).

Lycopodium tenellum (Beauv.) Desv. apud Poir. in Encycl. Méth., Bot., Suppl. iii: 553 (1814).

Selaginella albo-nitens Spring, tom. cit.: 139 (1843).—Jenman, Ferns Brit. W. Ind.: 393 (1909).

—Hieron. in Hedwigia lviii: 310 (1917).

Selaginella mollis Fée, Mém. Fam. Foug. xi: 133, t. 34 fig. 1 (1866); non *S. mollis* A. Braun (1865).

Selaginella apus sensu Bak. in Ann. Bot. v: 170 (1891); non Spring.

Selaginella albo-nitens forma *typica* Hieron., tom. cit.: 311 (1917).

CUBA. Without precise locality, *Wright 940 pro parte* (K; NY); near Loma del Gato, Cobre Range, *Leon, Clément & Roca 484* (NY), *10031* (NY), *10392* (NY); Cooper's Ranch, base of El Yunque Mt., Baracoa, *Underwood & Earle 302* (BM; NY), *514* (BM; NY), *1076* (NY), *1362* (NY); Rio Macaguanigua, Oriente, *Shafer 3972* (NY), *3979* (NY).

JAMAICA. Without precise locality, *Swartz* (BM); River Head near Swarton, *Underwood 1918* (NY), *1919* (NY); Mabess R., *Harris 7493* (NY); Ipswich, *Orcutt 7772* (K); Spring Garden, Portland, *Orcutt 4762* (BM), *4763* (BM).

HISPANIOLA. Port Mayot to Corréil, *Nash 197* (NY); Thor Source, vicinity of Port au Prince, *Leonard 10111* (BM); Puilboreau Pass, vicinity of Ennery, Dépt. de l'Artibonite, 325–900 m., *Leonard 9135* (BM), *9539* (BM); Trois Rivières, near Plaisance, vicinity of Ennery, Dépt. de l'Artibonite, 325–900 m., *Leonard 9201* (BM); vicinity of Marmelade, Dépt. du Nord, c. 800 m., *Leonard 8160* (BM); bank of Jean Rabel river, vicinity of Jean Rabel, *Leonard 12810* (BM; NY); vicinity of Plaisance, Dépt. du Nord, c. 400 m., *Leonard 9285a* (BM), *9398* (BM); vicinity of St. Louis du Nord, *Leonard 14152* (BM), *14222* (BM; NY), *14272* (BM; NY); Morne Chavary, vicinity of St. Louis du Nord, *Leonard 14545* (BM); La Coup Road, vicinity of Port de Paix, *Leonard 12278* (BM), *12300* (BM); Barrabas, *Raunkiaer* (BM); Sanchez, *Rose, Fitch & Russell 1192* (BM; NY); Las Cañitas, sea-level, *Abbott 2720* (BM); Azui, Prov. Ceibo, *Taylor 278A* (NY).

PUERTO RICO. Without precise locality, *Herb. Desvaux* (P); La Juanita, near Las Marias, *E. Britton 3956* (NY); Sierra de Naguabo, Barrio de Maizales, *Britton & Cowell 2119* (NY); Pueblo Viego, *Hioram 1* (NY); ravine between Morovis and Corozal, *Britton & Boynton 8435* (BM; NY); ravine above Corozal, *Britton 7788* (NY),

Britton & Boynton 8351 (NY); bank near Aguas Buenas, *Britton* 9192 (BM; NY); near Rio Pedras, *Dale* (NY), *Johnston & Stevenson* 1363 (BM; NY); near Utuado, *Britton & Cowell* 994 (NY); between Arcibo and Utuado, *E. Britton* 2071 (NY); near Dona Juana Waterfall, Toro Negro, *Britton & Brown* 6216 (NY); vicinity of Ala de la Piedra above Villalba, 700–750 m., *Britton & Brown* 6130 (BM; NY); between Guayama and Cayey, *Britton & Brown* 7017 (NY); near Cayey, *Underwood & Griggs* 279 (NY); ravine at Experiment Station near Mayaguez, *Britton & Marble* 545 (NY); Luquillo Mts., *Heller* 758 (BM; NY); 22 km. south of San Juan, *Heller* 670 (BM; NY).

SABA. Ganiby Gut, *Suringar* (BM; Ley).

ST. KITS. Nine Turn Gut, 360 m., *Box* 351 (BM); Molyneux Estate, in forest, *Britton & Cowell* 322 (BM; NY).

MONTERRAT. Pond Mts., near Roches, *Shafer* 721 (BM; NY); Fergus Mt., 600 m., *Shafer* 334 (BM; NY).

GAUDELLOUPE. Without precise locality, *l'Herminier* (BM); Rivière des Habitants, St. Louis, *l'Herminier* (ex Fée).

DOMINICA. Waterfalls of Massacre R., between Sylvania and Mt. Joy, 500 m., *Hodge* 1369 (BM).

ST. VINCENT. *Smith* 1376 (K), 1377 (K).

Geographical range: West Indies.

This species is very closely allied to *S. cladorrhizans* A. Braun, which is found in Trinidad and Venezuela.

24. ***Selaginella armata*** Bak. in Journ. of Bot. xxii: 90 (1884); Handb. Fern-Allies: 69 (1887).

Selaginella patula sensu Sauvalle in An. Acad. Habana viii: 413 (1872); non Spring.

Selaginella rotundifolia sensu Sauvalle, loc. cit. (1872); non Spring.

Selaginella rhodospora Bak. in Journ. of Bot. xxii: 111 (1884).—Jennings in Ann. Carnegie Mus. xi: 48 (1917).

Selaginella consimilis Bak., op. cit. xxiii: 179 (1885).

Selaginella plagiochila sensu Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 150 (1897) pro parte, quoad pl. portoric.; non Spring.—Urb., Symb. Antill. iv: 70 (1903).—Maxon in Sci. Surv. Porto Rico & Virgin Is. vi: 518 (1926).

Selaginella eatoni Hieron. ex Small, Ferns Trop. Florida: 67, fig. 49 (1918).

Diplostachium eatoni (Hieron. ex Small) Small, Ferns Southeast. St.: 422 (1938).

CUBA. Without precise locality, *Wright* 1824 (BM; K), 3907 (BM; K), 3908 (BM; K, type; NY); Guala Hill, Mendoza, not far from Tapaste, Havana, *Leon* 3602 (NY); Sierra Mendoza, Pinar del Rio, *Shafer* 11150 (BM; NY); on limestone, Monte Villa Real, near Cojimar, Havana, *Leon & Hioram* 4721 (NY); near Herradura, *Britton* 6531 (NY); limestone rocks, San Diego de los Baños, Pinar del Rio, *Britton, Earle & Gager* 6716 (BM; NY).

ISLE OF PINES. Nueva Gerona, *Curtiss* (NY); vicinity of Los Indios, *Britton & Wilson* 14260 (BM; NY).

JAMAICA. Farm Hill Works, *Orcutt* 5473 (BM); vertical face of wet shaded cliff, Mt. James, St. Andrew, c. 450 m., *Maxon* 8517 (Gray).

HISPANIOLA. Puilboreau Pass, vicinity of Ennery, Dépt. de l'Artibonite, 325–900 m.,

Leonard 9081 (BM), 9082 (BM); Santo Domingo, without precise locality, *Wright, Parry & Brummel* (Gray).

PUERTO RICO. Sierra de Naguabo, Rio Blanco, *Sinten* 5385 (BM); moist base of large boulders along river Cubuy to Meseta Falls, Sierra de Naguabo, 60–210 m., *Shafer* 3151 (BM; NY); road from Cayey to Guyana, *Underwood & Griggs* 315 (BM; NY).

Geographical range: southern Florida and the Greater Antilles.

This is separated from the other small species by its elliptic-lanceolate ciliate median leaves with conspicuous white margins.

25. *Selaginella bracei* Hieron. ex O. C. Schmidt in Fedde, Repert. Sp. Nov. xx: 156 (1924).

Selaginella eatoni sensu Britton & Millsp., Bahama Fl.: 477 (1920); non Hieron.

Selaginella sagraeana Hieron. ex O. C. Schmidt, tom. cit.: 157 (1924), nom. nud.

ANDROS (BAHAMAS). Mastic Point and vicinity, *Brace* 7001 (NY), 7024 (syntype-collection; BM); Savannah, near Standard Creek, Northern Section, in lime sinks, *Small & Carter* 8879 (BM; NY); Coppice, near Fresh Creek, Northern Section, in lime sinks, *Small & Carter* 8780 (NY).

CUBA. Without precise locality, *Wright* 3908 *pro parte* (NY); base of limestone cliff, vicinity of Viñales, Pinar del Rio, *Britton* 7527 (BM; NY); railroad culvert near Ibarra, Matanzas, *Britton & Shafer* 801 (BM; NY); coral rock cliffs on shore, Playa, Matanzas, *Britton & Shafer* 56 (NY); valley of the Caniruas, vicinity of Matanzas, *Britton & Shafer* 799 (BM; NY); Cueva de Cotilla, Havana, *Wilson & Leon* 3374 (NY); on rocks at mouth of cave, Cumbre Hermosa, Havana, *Wilson & Leon* 11627 (NY); coral rock, valley of the San Juan, near Madruga, *Britton & Shafer* 287 (NY).

Geographical range: confined to the Bahamas and Cuba.

26. *Selaginella rotundifolia* Spring in Bull. Acad. Brux. x, 1: 139 (1843); in Mém. Acad. R. Belg. xxiv: 85 (1850).—Fée, Mém. Fam. Foug. xi: 133, t. 34 fig. 2 (1866).—Bak., Handb. Fern-Allies: 68 (1887).—Duss, Fl. Crypt. Antill. Franç.: 125 (1903).

? *Jungermannia mastigophora* Spreng. in L., Syst. Veg., ed. 16, iv, 1: 222 (1827).

Selaginella confusa sensu Griseb., Fl. Brit. W. Ind. Is.: 645 (1864) *pro parte*, quoad pl. S. Vincent.; non Spring.

ST. KITTS. Upper slopes of Mt. Misery, 750–1,110 m., *Box* (BM).

GUADELOUPE. Without precise locality, *Beaupertuis* (BM; P, syntype), *l'Herminier* (BM); Gombeyre (habit. Le Bisdary), Camp-Jacob, Trois-Rivières, Lamentin (Ravine-Chaude), &c., *Duss* 3995 (ex Duss).

DOMINICA. Without precise locality, *Jenman* (NY), *Lloyd a* and *b* (NY); Laudat, *Lloyd* 81 (NY); Boiling Lake, *Noel* (NY); Goodwill Valley, *Eggers* (K); Hatton Garden, *Hodge* 3036 (BM).

MARTINIQUE. Without precise locality, *Steinheil* (P, syntype); Morne Rouge, *Hahn* (BM); near Thermes (ex Fée); Petit île de Saint-Pierre (ex Fée); Saint-Pierre (Collège, Trois-Ponts), Pointe-Fine, camp de l'Alma, fontaines Didier et Absalon, *Duss* 1597, 4595 and 4595a (ex Duss).

ST. LUCIA. Upper slopes of Morne Gimie, 600–930 m., *Box* (BM); Canaries Gorge, 90 m., *Box* 431 (BM); Malmaison, near Soufriere, 450 m., *Box* 1873 (BM).

ST. VINCENT. Foot of Morne Garou, 900 m., *Smith* 1375 (K); St. Andred, *Guilding* (K).

GRENADA. Without precise locality, *Jenman* (NY), *Sherring* (BM); close to a waterfall, Annandale, *Broadway* 1893 (NY), 5960 (BM), 7036 (BM).

Geographical range: confined to the Lesser Antilles.

There is a letter from Sereno Watson at Kew which shows that *S. rotundifolia* is Sprengel's *Jungermannia mastigophora* as interpreted by some authors. Sprengel gives the locality of his species as 'Guiana. Perrin'.

27. ***Selaginella ovifolia*** Bak. in Journ. of Bot. xxii: 90 (1884); Handb. Fern-Allies: 68 (1887).—Urb., *Symb. Antill.* iv: 70 (1903).

? *Selaginella rotundifolia* sensu Urb., op. cit. ix: 392 (1925); non Spring.

JAMAICA. Farm Hill, *Orcutt* 3465 (BM; K).

HISPANIOLA. La Coup Road, vicinity of Port de Paix, *Leonard* 12276 (BM; NY), 12292 (BM; NY); vicinity of Jean Rabel, *Leonard* 13728 (BM; NY); near Marmelade, Massif du Nord, c. 700 m., *Ekman* 8314 (K); on rock in stream, ravine N.W. of Marmelade, 600 m., *Nash & Taylor* 1342 (NY); on ground in pine land, Camp 4, Marmelade, 750 m., *Nash & Taylor* 1300 (NY); vicinity of Ennery, Dépt. de l'Artibonite, 325–900 m., *Leonard* 9036 (BM), 9053 (BM); vicinity of Dondon, Dépt. du Nord, c. 400 m., *Leonard* 8612 (BM).

PUERTO RICO. Without precise locality, *Schwanecke* (K, type); summit of El Yunque, Sierra de Luquillo, *Sintenis* 1550 (K; NY); Monte los Rabanos, Sierra de las Piedras, *Sintenis* 5478 (K); crevices of rock, valley of the Toro Negro, north of Villalba, 550–600 m., *Britton & Horne* 7485 (NY), 7486 (BM; NY); wet shaded cliff, valleys near Dona Juana Waterfall, Toro Negro, c. 700 m., *Britton & Brown* 6215 (BM; NY); bank, Guayama–Cayey Road, 700–750 m., *Britton & Earle* 6459 (NY); Monte Torrecilla, 900–1,100 m., *Britton, Cowell & Brown* 5649 (NY); summit of Loma la Mina, Sierra de Naguabo, c. 945 m., *Shafer* 3323 (BM; NY), 3330A (NY).

Geographical range: confined to Jamaica, Hispaniola, Puerto Rico and British Honduras.

This species closely resembles *S. rotundifolia*, from which it is separated by its ciliate (not denticulate) leaves. The subacute lateral leaves separate it from *S. plagiochila*, and the ovate median leaves from *S. armata*.

INTRODUCED SPECIES

SELAGINELLA KRAUSSIANA (Kunze) A. Braun.

JAMAICA. Cinchona, escaped from cultivation, *Harris* 7894 (BM; NY), *Orcutt* 5486 (K; NY), 5498 (K), *Clute* 347 (NY), *Maxon & Killip* 562 (BM; NY).

Native of South and Tropical Africa; the commonest species in cultivation, now found as an escape in many countries.

SELAGINELLA PLANA (Desv.) Hieron.

Selaginella willdenovii sensu Maxon in Sci. Surv. Porto Rico & Virgin Is. vi: 521 (1926); non Bak.

JAMAICA. Woods, eastern slopes, south end of John Crow Mts., St. Thomas, *Britton* 4195 (NY).

PUERTO RICO. Mayaguez, *Hess* 2213 (NY).

ST. THOMAS. Cultivated, *Miss Morrow* 89 (NY).

Native of the Malay Archipelago; commonly cultivated and now well established in some tropical countries.

SELAGINELLA VITICULOSA Klotzsch.—*Britton*, Fl. Bermuda: 429 (1918).

BERMUDA. Escaped from a greenhouse, shaded wall, Mt. Langton, *Brown, Britton & Seaver* 1189 (NY).

Native of Venezuela; in cultivation for many years and found as an escape in Brazil

EXCLUDED SPECIES

SELAGINELLA ANOMALA (Hook. & Grev.) Spring.—Fée, Mém. Fam. Foug. xi: 135 (1866).

GUADELOUPE. *L'Herminier* (ex Fée).

Conspecific with *S. porelloides*, a species found in Trinidad and Guiana. The Guadeloupe record probably refers to *S. tenella*.

SELAGINELLA APUS Spring.—Duss, Fl. Crypt. Antill. Franç.: 125 (1904).

MARTINIQUE. Sur les rochers entre le Fond-Canonville et la Fontaine-Chaude, au pied des murs et des parois des cases à bains, sur les murs des canaux d'irrigation du jardin bot. de St-Pierre, *Duss* 4132 (ex Duss).

A North American species. The Martinique records probably refer to *S. tenella*.

SELAGINELLA FLEXUOSA Spring.—Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 150 (1897).

MARTINIQUE. *Duss* 1600 (ex Krug).

A Brazilian species very different from any known from Martinique.

SELAGINELLA JUNGERMANNIODES (Gaud.) Spring.—Fée, Mém. Fam. Foug. xi: 134 (1866).

HISPANIOLA. *De Tussac* (ex Fée).

MARTINIQUE. La Calebasse, *Mlle. Rivoire* (ex Fée).

This is a Brazilian species which resembles *S. serpens*. The West Indian records probably refer to that species.

SELAGINELLA MARTENSII Spring.—Krug apud Urb. in Engl., Bot. Jahrb. xxiv: 151 (1897).—Duss, Fl. Crypt. Antill. Franç.: 127 (1904).

GAUDELLOUPE. Savanes du Camp-Jacob, Savane-à-Mulets (près de la source du Galion), &c., *Duss* 3752 (ex Krug and Duss).

MARTINIQUE. Savanes supérieures de l'Ajoupa-Bouillon, route de Fonds-St-Denis aux Deux-Choux et de là au Calvaire, *Duss* 3969 (ex Duss).

A Mexican species which is well known in cultivation. It may have been confused with the West Indian *S. substipitata*.

SELAGINELLA MNIODES (Sieber ex Hook. & Grev.) Spring.

GAUDELLOUPE. *L'Herminier* (K).

The specimens at Kew are mixed with *S. substipitata* and probably never came from Guadeloupe. Sieber's *Fl. mixta* 325, stated to have been from Mauritius by Spring (Mém. Acad. R. Belg. xxiv: 223 (1850)), was actually from Trinidad, collected by Wrbna, according to A. Braun (Index Sem. Hort. Bot. Berol., App.: 23 (1860)).

SELAGINELLA PORELLOIDES (Lam.) Spring.—Duss, Fl. Crypt. Antill. Franç.: 126 (1904).

GAUDELLOUPE. Massif de Houëlmon, Vieux-Fort (cafeyères au pied du morne Pavillon), Vieux-Habitants (environs de l'habit. La Grivellière), &c., *Duss* 3881 (ex Duss).

MARTINIQUE. Bois entre le camp Colson et le camp de l'Alma, environs des Deux-Choux (plateau Chou), *Duss* 4103 (ex Duss).

A species found in Trinidad and Guiana. The Lesser Antillean records probably refer to *S. tenella*.

A NEW SPECIES OF *CHEILANTHES* FROM AFRICA AND SOME ADDITIONS TO THE FERN FLORA OF NORTHERN RHODESIA

By A. H. G. ALSTON

A SMALL collection of ferns made by Mr. E. Milne-Redhead, which was sent for naming from the Royal Botanic Gardens, Kew, included a striking new species of *Cheilanthes* and several species which had not been previously recorded from the area.

The area, which is near the junction of Northern Rhodesia, Angola and the Belgian Congo, is evidently of exceptional interest.

Cheilanthes angustifrondosa Alston, sp. nov. (Plate 2).

Species inter africanas insignis, ex affinitate *Cheilanthei fragilis* Hook. et aliarum specierum asiaticarum; a *C. fragili* glabritie stipitis, squamis bicoloribus et pinnulis acutioribus facile distinguitur; rhizomatibus breviter repentibus stipitibus crebre caespitosic apicem versus indutis; squamis anguste linearibus fusco-castaneis, albo-marginatis, subintegris; frondibus bipinnatis, ambitu anguste oblongo-linearibus, 35–50 cm. longis, usque ad 6 cm. latis, stipitibus 3–10 cm. longis; rachidibus purpureo-castaneis, dorso applanatis, glabris et nitentibus vel basin versus sparse squamulosis, usque ad 2 mm. diametro; pinnis suboppositis c. 18 utroque latere basin versus pinnatis, pinnula apicali profunde pinnatifida; pinnulis c. 8 mm. longis, 2.5 mm. latis, oblongo-triangularibus, leviter falcatis, utrinsecus omnino glabris, nervis immersis, subtus glauco-viridibus, supra obscure viridibus; nervis pinnatim ramosis, nervulis lateralibus simplicibus vel furcatis; indusiis subsemilunulatis, glabris, margine sinuatis; sporis subtrigonis, sublaevibus.

NORTHERN RHODESIA. Kalambo Falls, Abercorn, 29 Mar. 1947, *van Meel* 1369 (BM).

ANGOLA. District of Moxico: towards the top of a hill, south of Lusavo Falls, in *Brachystegia-Isobertinia* woodland on sand near rocky outcrop, 12 Jan. 1938, *Milne-Redhead* 4074 (K, type; BM).

BELGIAN CONGO. District du Haut-Katanga: Sub-Distr. Sakania: Luente, N.N.W. of Kiniamo, under trees, 24 Feb. 1908, *Kassner* 2496 (BM; K).

A remarkable new African species which seems to represent the small Asiatic group of *C. fragilis* and its allies. A search in the herbaria at the British Museum and Kew brought to light some fragmentary specimens collected by Kassner and van Meel.

Thelypteris guineensis (Christ) Alston, comb. nov.

Dryopteris guineensis Christ in Journ. de Bot. xxii: 22 (1909).

NORTHERN RHODESIA. Mwinilunga District: in dense shade of evergreen vegetation by R. Matonchi near dam, 6 Nov. 1937, *Milne-Redhead* 3131 (K).

ANGOLA. District of Lunda: Falls of Rio Chiumbe, Dala, *Carrisso & Mendonça* 567 (BM).

FRENCH GUINEA. Labé, *Chevalier* 12385 (type; BM, photo).

A rare species previously recorded only from the original collection from French Guinea.

ASPLENIUM FORMOSUM Willd.

NORTHERN RHODESIA. Mwinilunga District: among moss on the trunks in evergreen vegetation by R. Matonchi below dam, 19 Oct. 1937, *Milne-Redhead* 2849 (K). Camp 17 west of R. Lunga, rocks in river in shade near the water level, 12 Sept. 1930, *Milne-Redhead* 885 (K).

DORYOPTERIS PILOSA (Poir.) Kuhn.

NORTHERN RHODESIA. Mwinilunga District: Luakera Falls, north of Mwinilunga, on and by rocks on slope in open *Brachystegia* woodland, 25 Jan. 1938, *Milne-Redhead* 4351 (K).

A species previously known only from Réunion, with a doubtful record from Mauritius (*Commerson* (K)). The Rhodesian specimens are not absolutely identical with those from Réunion, but it seems inadvisable to separate them in the present state of our knowledge.

ELAPHOGLOSSUM SPATHULATUM (Bory) Moore.

NORTHERN RHODESIA. Mwinilunga District: Luakera Falls, north of Mwinilunga, on mossy rocks in shade of evergreen vegetation by river, 25 Jan. 1938, *Milne-Redhead* 4334 (K).

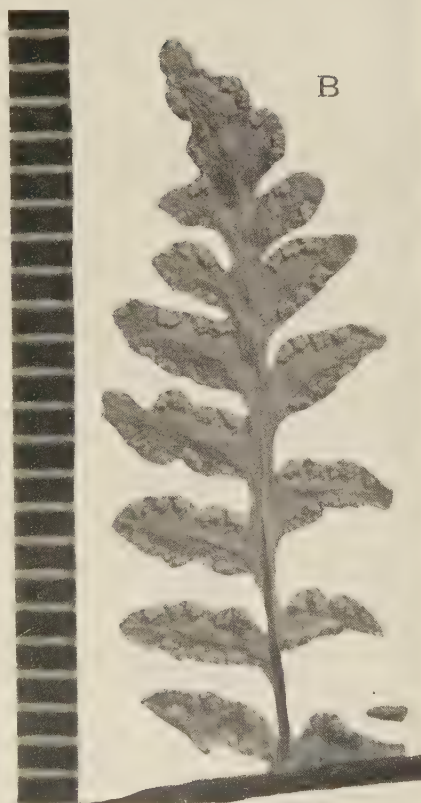
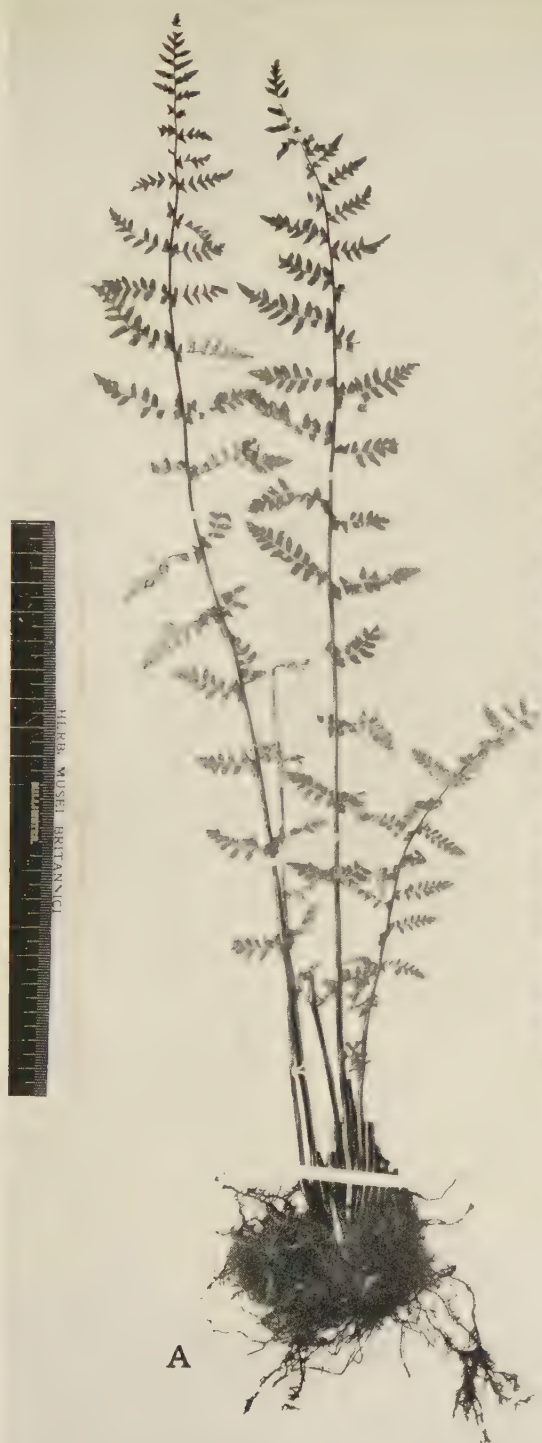
OPHIOGLOSSUM COSTATUM R. Br. (*O. fibrosum* Schumach.).

NORTHERN RHODESIA. Mwinilunga District: Kalenda Dambo, in moist peaty shallow soil overlying 'laterite', 14 Feb. 1938, *Milne-Redhead* 4567 (K).

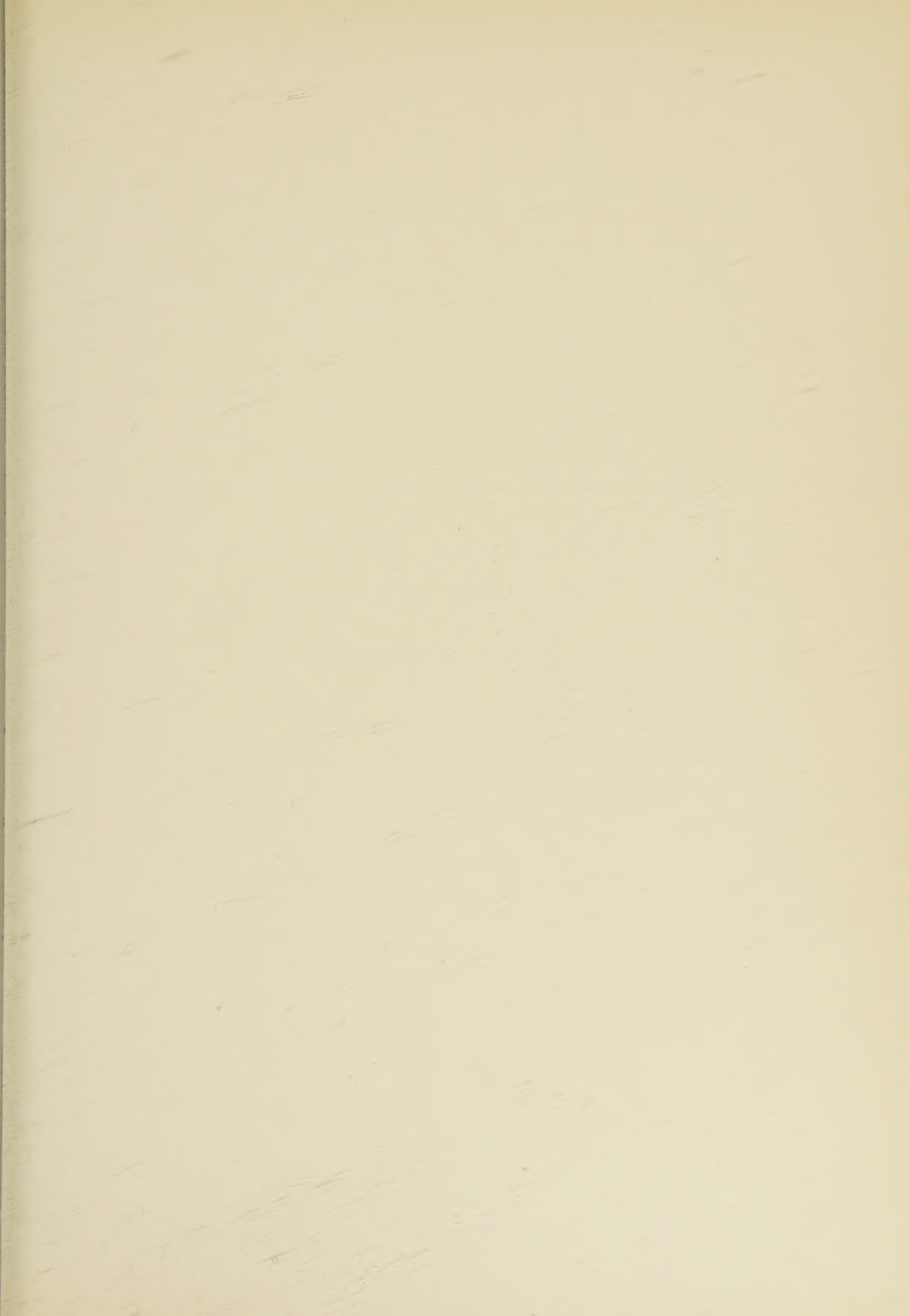
Ophioglossum pedunculatum Desv. is clearly the same, as is shown by a photograph in the British Museum Herbarium, and the species has recently been described again as *O. fenixii* Tardieu. Clausen's monograph (Mem. Torr. Bot. Club xix: 140 (1938)) confuses this plant with South African specimens which lack the characteristic bulbous rootstock and conspicuous pale median band of the leaves. *O. sarcophyllum* Desv. seems to be the correct name for the South African plant.

PLATE 2

Cheilanthes angustifrondosa. A, Entire plant (about $\frac{1}{3}$ nat. size). B, Pinna ($\times 4\frac{1}{2}$).



Type Number
HERB. KIW



PRINTED IN
GREAT BRITAIN
AT THE
UNIVERSITY PRESS
OXFORD
BY
CHARLES BATEY
PRINTER
TO THE
UNIVERSITY